

Analysis code for ‘People have shaped most of terrestrial nature for at least 12,000 years’

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Setup

Load **tidyverse** and **sf** packages for data summaries and visualization, and **patchwork** for multi-panel plots. Also load this package, **anthromes** for additional analysis and plotting functions.

```
library(tidyverse)
library(sf)
library(patchwork)
devtools::load_all() # imports this package
```

Import the precomputed Anthromes-12k-DGG dataset. These include fixed inputs like land area, region, and biome as well as the anthrome classifications for HYDE 3.2 baseline, upper, and lower scenarios.

```

# HYDE/Anthromes fixed inputs
an12_dgg_inputs <- read_sf('data/an12_dgg_inputs.shp') %>%
  st_drop_geometry() %>% # don't need the locations
  rename(land_area = land_ar, pot_vill = pot_vll, region_name = regn_nm) %>%
  mutate(region_name = if_else( # fix the region name
    region_name == 'Latin America', 'Latin America and Caribbean',
    region_name)) %>%
  left_join(biome_key, by = c('pot_veg' = 'biome_value')) %>%
  select(-pot_vill, -pot_veg)

```

```

# Baseline, upper, and lower scenarios
an12_dgg_baseline <- read_anthromes('data/an12_dgg_baseline.csv')
an12_dgg_upper <- read_anthromes('data/an12_dgg_upper.csv')
an12_dgg_lower <- read_anthromes('data/an12_dgg_lower.csv')

```

```

# Combine in one tibble
an12_dgg <- an12_dgg_baseline %>%
  rename(baseline = anthrome) %>%
  mutate(upper = an12_dgg_upper$anthrome,
         lower = an12_dgg_lower$anthrome) %>%
  mutate(time_step = ordered(time_step, levels = time_steps_ordered),
         .after = id) %>%
  left_join(an12_dgg_inputs, by = 'id')

```

Import the HYDE 3.2 population estimates.

```

hyde_pop <- readRDS('data/derived_data/hyde_dgg') %>%
  filter(var == 'popc') %>%
  select(-var) %>%
  pivot_longer(-ANL12_ID, names_to = 'time_step', values_to = 'population') %>%
  mutate(time_step = ordered(time_step, levels = time_steps_ordered))

```

Import contemporary biodiversity and conservation variables.

```

total_land_area <- sum(an12_dgg_inputs$land_area)

contemp_vars <- read_sf('data/contemp_vars.shp') %>%
  st_drop_geometry() %>%
  mutate(
    land_area = land_ar,
    pa50 = pa_km2 >= (0.5 * land_ar),
    ind50 = ind_cnt >= (0.5 * land_ar),
    kba50 = kba_km2 >= (0.5 * land_ar),
    v_rich = round(v_rich),
    v_thr = round(v_thr),
    hfp_max = round(hfp_max),
    tgc = X_3_c_4,
    nmh3 = nmh_34 - nmh_4
  ) %>%
  select(-c(X_3_c_4, max, land_ar, landsut, pop17, food_cl, mean, nmh, L1_ID))

```

Create a convenience tibble in “wide” format for the regression analysis in Figure 4.

```

regression_dat <- an12_dgg %>%
  filter(time_step %in% c(
    time_steps_millennia,
    time_steps_centuries,
    '2010AD',
    '2017AD'
  )) %>%
  left_join(anthrome_key, by = c('baseline' = 'anthrome')) %>%
  select(id, time_step, region_name, land_area, class) %>%
  pivot_wider(names_from = time_step, values_from = class) %>%
  left_join(select(contemp_vars, -land_area), by = 'id') %>%
  na.omit() %>%
  rename_with( ~ paste0('an_', .), all_of(unique(
    c(time_steps_millennia, time_steps_centuries,
      '2010AD',
      '2017AD'
    )
  )))

```

Main Analysis

The code below is sufficient to reproduce the analysis presented in the main text.

Anthrome Trajectory Summaries

Create summaries of global land areas for each anthrome along with breakdowns by region and biome. See the documentation for the *anthrome_trajectory()* function for more details.

```

global_summary <- an12_dgg %>%
  select(-lower, -upper) %>%
  rename(anthrome = baseline) %>%
  anthrome_trajectory()

## Warning in mapply(.f, .x, .y, MoreArgs = list(...), SIMPLIFY = FALSE): longer
## argument not a multiple of length of shorter

regional_summary <- an12_dgg %>%
  select(-lower, -upper) %>%
  rename(anthrome = baseline) %>%
  anthrome_trajectory(by = region_name)

biome_summary <- an12_dgg %>%
  select(-lower, -upper) %>%
  rename(anthrome = baseline) %>%
  anthrome_trajectory(by = biome)

```

Do the same thing for conservation and biodiversity variables. Note the distinction between the filtered variables and the summed ones for which the preprocessing is more complex.

```

# Indigenous lands
ind_summary <- contemp_vars %>%
  select(id, ind_cnt) %>%
  rename(land_area = ind_cnt) %>%
  remove_missing() %>% # remove missing cells
  # this join here has two land areas
  left_join(select(an12_dgg, -land_area), by = 'id') %>%
  select(-lower, -upper) %>%
  rename(anthrome = baseline) %>%
  anthrome_trajectory() %>%
  mutate(var = 'Indigenous Lands')

## Warning: Removed 4217 rows containing missing values.

## Warning in mapply(.f, .x, .y, MoreArgs = list(...), SIMPLIFY = FALSE): longer
## argument not a multiple of length of shorter

# Protected areas
pa_summary <- contemp_vars %>%
  select(id, pa_km2) %>%
  rename(land_area = pa_km2) %>%
  remove_missing() %>%
  left_join(select(an12_dgg, -land_area), by = 'id') %>%
  select(-lower, -upper) %>%
  rename(anthrome = baseline) %>%
  anthrome_trajectory() %>%
  mutate(var = 'Protected Areas')

## Warning: Removed 4217 rows containing missing values.

## Warning: longer argument not a multiple of length of shorter

# Key Biodiversity Areas
kba_summary <- contemp_vars %>%
  select(id, kba_km2) %>%
  rename(land_area = kba_km2) %>%
  remove_missing() %>%
  left_join(select(an12_dgg, -land_area), by = 'id') %>%
  select(-lower, -upper) %>%
  rename(anthrome = baseline)%>%
  anthrome_trajectory() %>%
  mutate(var = 'Key Biodiversity Areas')

## Warning: Removed 4217 rows containing missing values.

## Warning: longer argument not a multiple of length of shorter

# Unused lands
unused_summary <- contemp_vars %>%
  select(id, land_area) %>%
  left_join(select(an12_dgg, -land_area), by = 'id') %>%
  filter(time_step == '2017AD', baseline >= 50) %>%

```

```

select(id, land_area) %>%
remove_missing() %>%
left_join(select(an12_dgg, -land_area), by = 'id') %>%
select(-lower, -upper) %>%
rename(anthrome = baseline)%>%
anthrome_trajectory() %>%
mutate(var = 'Cultured and Wildlands (2017)')

## Warning in mapply(.f, .x, .y, MoreArgs = list(...), SIMPLIFY = FALSE): longer
## argument not a multiple of length of shorter

# Potential Natural Habitat
nmh3_summary <- contemp_vars %>%
mutate(nmh3_km2 = nmh3 * land_area) %>%
select(id, nmh3_km2) %>%
rename(land_area = nmh3_km2) %>%
left_join(select(an12_dgg, -land_area), by = 'id') %>%
select(-lower, -upper) %>%
rename(anthrome = baseline) %>%
anthrome_trajectory() %>%
mutate(var = 'Potential Natural (NMH)')

## Warning in mapply(.f, .x, .y, MoreArgs = list(...), SIMPLIFY = FALSE): longer
## argument not a multiple of length of shorter

# Likely Natural Habitat
nmh4_summary <- contemp_vars %>%
mutate(nmh4_km2 = nmh_4 * land_area) %>%
select(id, nmh4_km2) %>%
rename(land_area = nmh4_km2) %>%
left_join(select(an12_dgg, -land_area), by = 'id') %>%
select(-lower, -upper) %>%
rename(anthrome = baseline)%>%
anthrome_trajectory() %>%
mutate(var = 'Likely Natural (NMH)')

## Warning in mapply(.f, .x, .y, MoreArgs = list(...), SIMPLIFY = FALSE): longer
## argument not a multiple of length of shorter

# Shared Lands
shared_3gc_summary <- contemp_vars %>%
filter(tgc == 2) %>%
select(id, land_area) %>%
left_join(select(an12_dgg, -land_area), by = 'id') %>%
select(-lower, -upper) %>%
rename(anthrome = baseline) %>%
anthrome_trajectory() %>%
mutate(var = 'Shared Lands (3GC)')

## Warning in mapply(.f, .x, .y, MoreArgs = list(...), SIMPLIFY = FALSE): longer
## argument not a multiple of length of shorter

```

```

# Large Wild Areas
wild_3gc_summary <- contemp_vars %>%
  filter(tgc == 3) %>%
  select(id, land_area) %>%
  left_join(select(an12_dgg, -land_area), by = 'id') %>%
  select(-lower, -upper) %>% rename(anthrome = baseline)%>%
  anthrome_trajectory() %>%
  mutate(var = 'Large Wild Areas (3GC)')

## Warning in mapply(.f, .x, .y, MoreArgs = list(...), SIMPLIFY = FALSE): longer
## argument not a multiple of length of shorter

# combine into a single tibble for convenience
contemp_summary <- bind_rows(
  kba_summary,
  pa_summary,
  ind_summary,
  unused_summary,
  nmh3_summary,
  nmh4_summary,
  shared_3gc_summary,
  wild_3gc_summary
) %>%
# make sure they plot in the right order
mutate(var = factor(
  var,
  levels = c(
    'Key Biodiversity Areas',
    'Protected Areas',
    'Indigenous Lands',
    'Cultured and Wildlands (2017)',
    'Potential Natural (NMH)',
    'Likely Natural (NMH)',
    'Shared Lands (3GC)',
    'Large Wild Areas (3GC)'
  )
))

```

Save summary .csv files of everything calculated above to the data/derived_data/ directory (code not shown).

HYDE Population Curves

Calculate global population trends from HYDE 3.2 data. See function documentation for `get_hyde_pop()` for more details.

```

hyde_pop_all <- get_hyde_pop(hyde_pop)

hyde_pop_regions <- get_hyde_pop(hyde_pop, by = region_name)

hyde_pop_biomes <- get_hyde_pop(hyde_pop, by = biome) %>%
  filter(biome != 'Ice, snow')

```

Anthrome Legacies

Fit a series of GLMs to KBAs and species richness data using the anthrome maps from each time step in turn as categorical predictors. Repeat the analysis for all global land, natural areas, protected areas, and Indigenous lands. Extract the AIC of each model to assess how strongly the anthromes from each time period are associated with the given response variable.

```
# define a helper function to fit a GLM and extract it's AIC from a input formula.
calc_aic <- function(predictand, predictor, fam, dat){
  as.formula(paste(predictand, '~', predictor)) %>%
  glm(family = fam, data = dat) %>%
  AIC
}
```

Think of AIC as the amount of “divergence” between the model and the data – a relative rather than absolute measure of model fit. You can’t meaningfully compare the divergences of same model from different datasets, only the divergences among different models from the same dataset. Rescaling the AICs to [0,1] allows us to compare across variables by thinking in terms of the “best” or “worst” models for each row.

```
legacy_mods <-
  # find all combinations of response variables and predictor time steps
  expand_grid(time_step = unique(c(time_steps_millennia,
                                  time_steps_centuries)),
             predictands = c('kba50', 'v_thr', 'v_rich')) %>%
  mutate(
    # prepare the predictor variables
    predictors = paste0('an_', time_step),
    # associate each response variable to the correct distribution
    fam = if_else(predictands == 'kba50', 'binomial', 'poisson'),
    # Global GLM, use pmap to iterate through each model
    global_aic = pmap_dbl(list(predictands, predictors, fam), calc_aic,
                          dat = regression_dat),
    # "natural habitat"
    nmh_aic = pmap_dbl(list(predictands, predictors, fam), calc_aic,
                      dat = filter(regression_dat, nmh_34 > 0.5)),
    # protected areas
    pa_aic = pmap_dbl(list(predictands, predictors, fam), calc_aic,
                     dat = filter(regression_dat, pa50 == TRUE)),
    # Indigenous lands
    ind_aic = pmap_dbl(list(predictands, predictors, fam), calc_aic,
                      dat = filter(regression_dat, ind50 == TRUE))) %>%
  pivot_longer(global_aic:ind_aic, names_to = 'domain', values_to = 'aic') %>%
  # rescale AIC values by response variable
  group_by(predictands, domain) %>%
  mutate(aic_scaled = scales::rescale(aic)) %>%
  ungroup()
```

Figures

Reproduce all the figures in the main paper using the analyses run above. Please refer to the corresponding .Rmd source file for the plotting code.

Figure 1 - Global Summary

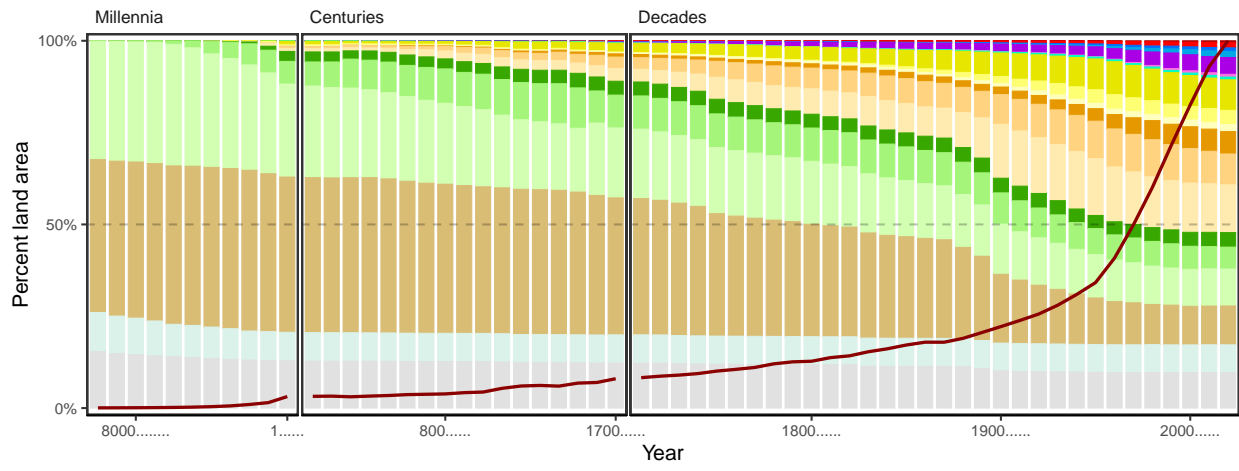


Figure 2 - Regional Summary

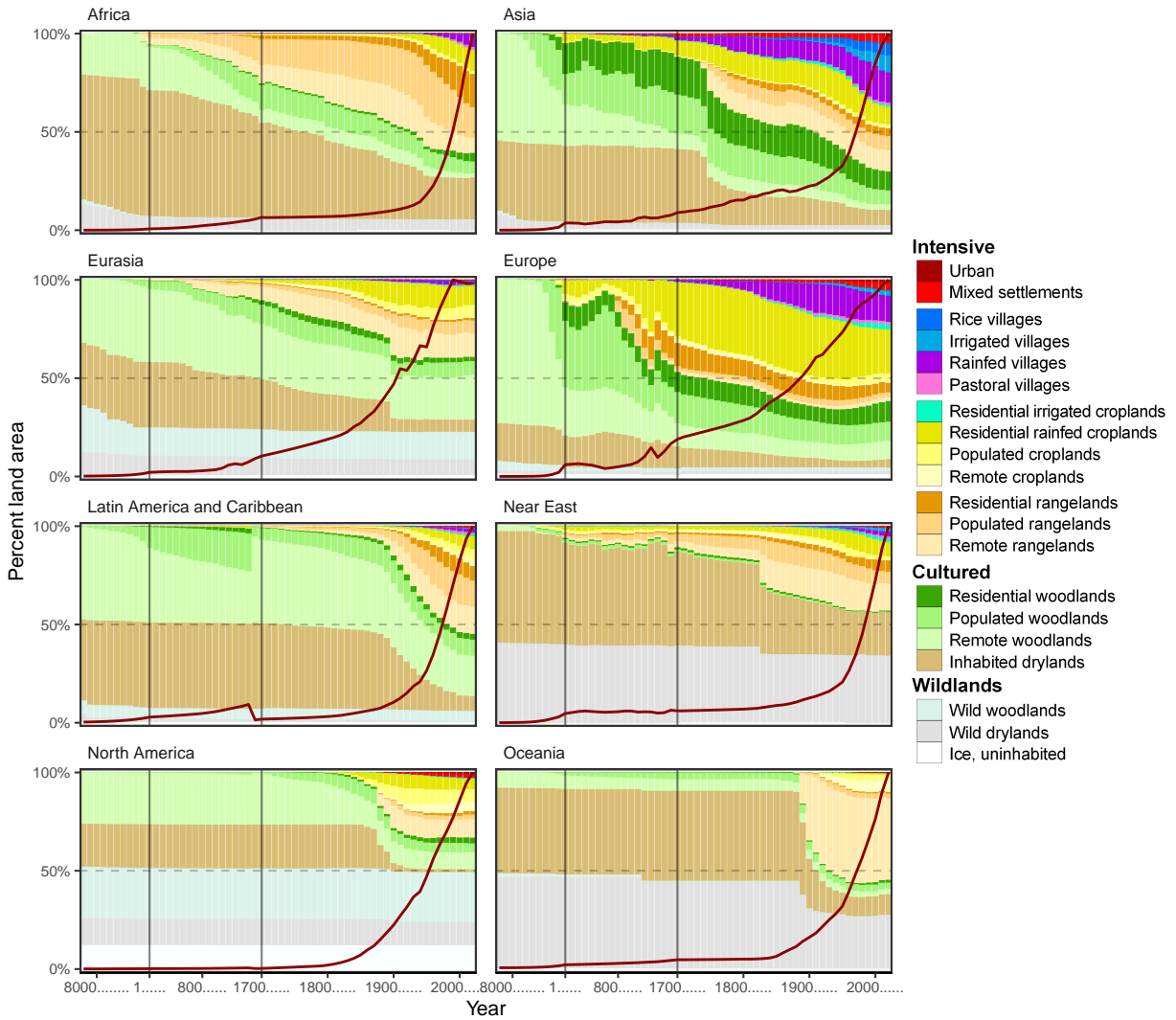


Figure 3 - Biome summary

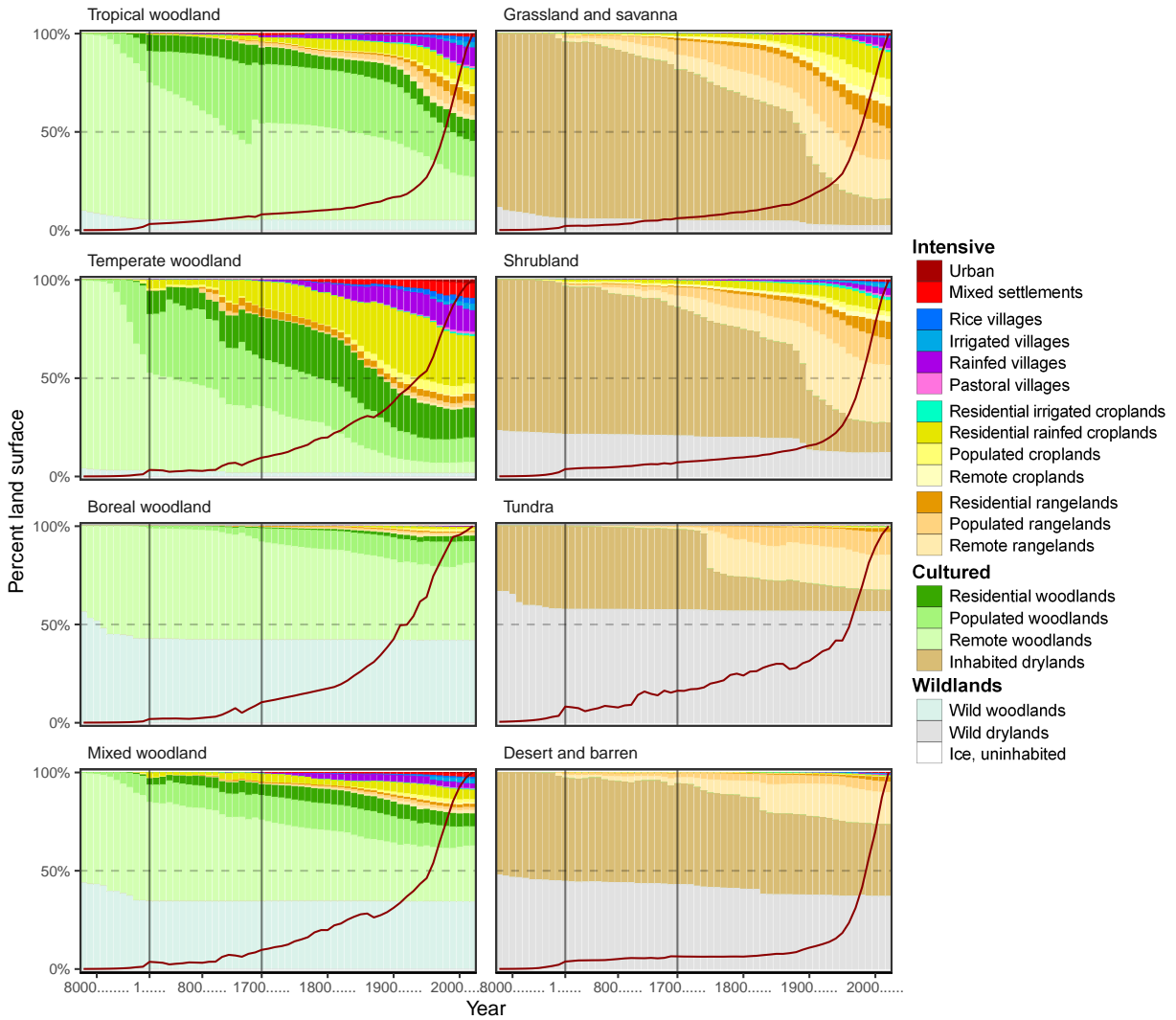
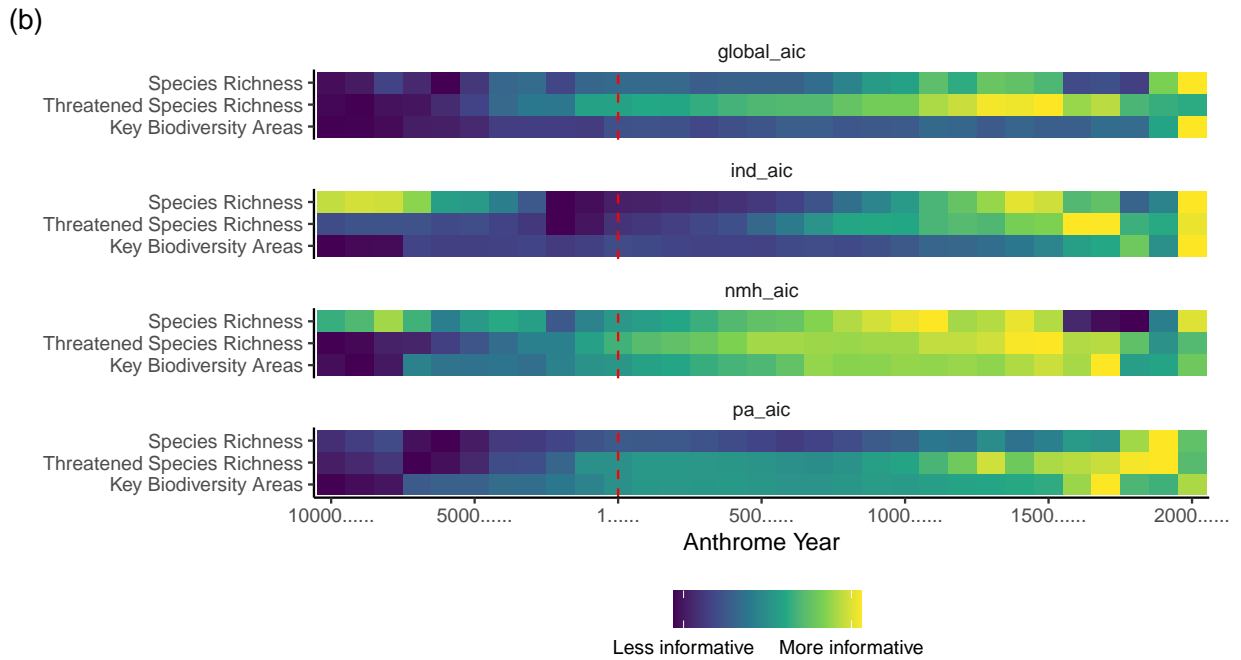
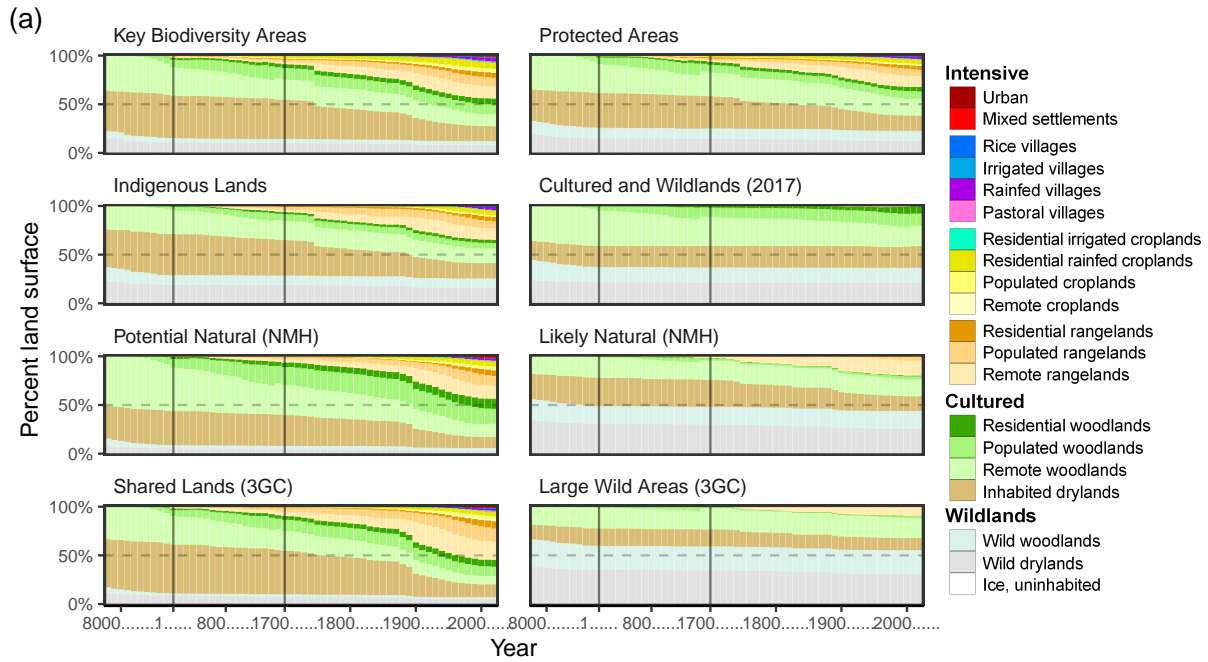


Figure 4 - Contemporary Data



Save the figures to the figures/ directory (code not shown).

Supplemental Analyses and Figures

Other visualization and analyses not included in the main paper.

Uncertainties

Visualize the anthrome uncertainties using the HYDE 3.2 upper and lower scenarios in the same way as above.

```
# could modify anthrome trajectory function so it computes uncertainties automatically . . .
global_summary_upper <- an12_dgg %>%
  select(-baseline, -lower) %>%
  rename(anthrome = upper) %>%
  anthrome_trajectory()

## Warning in mapply(.f, .x, .y, MoreArgs = list(...), SIMPLIFY = FALSE): longer
## argument not a multiple of length of shorter

global_summary_lower <- an12_dgg %>%
  select(-baseline, -upper) %>%
  rename(anthrome = lower) %>%
  anthrome_trajectory()

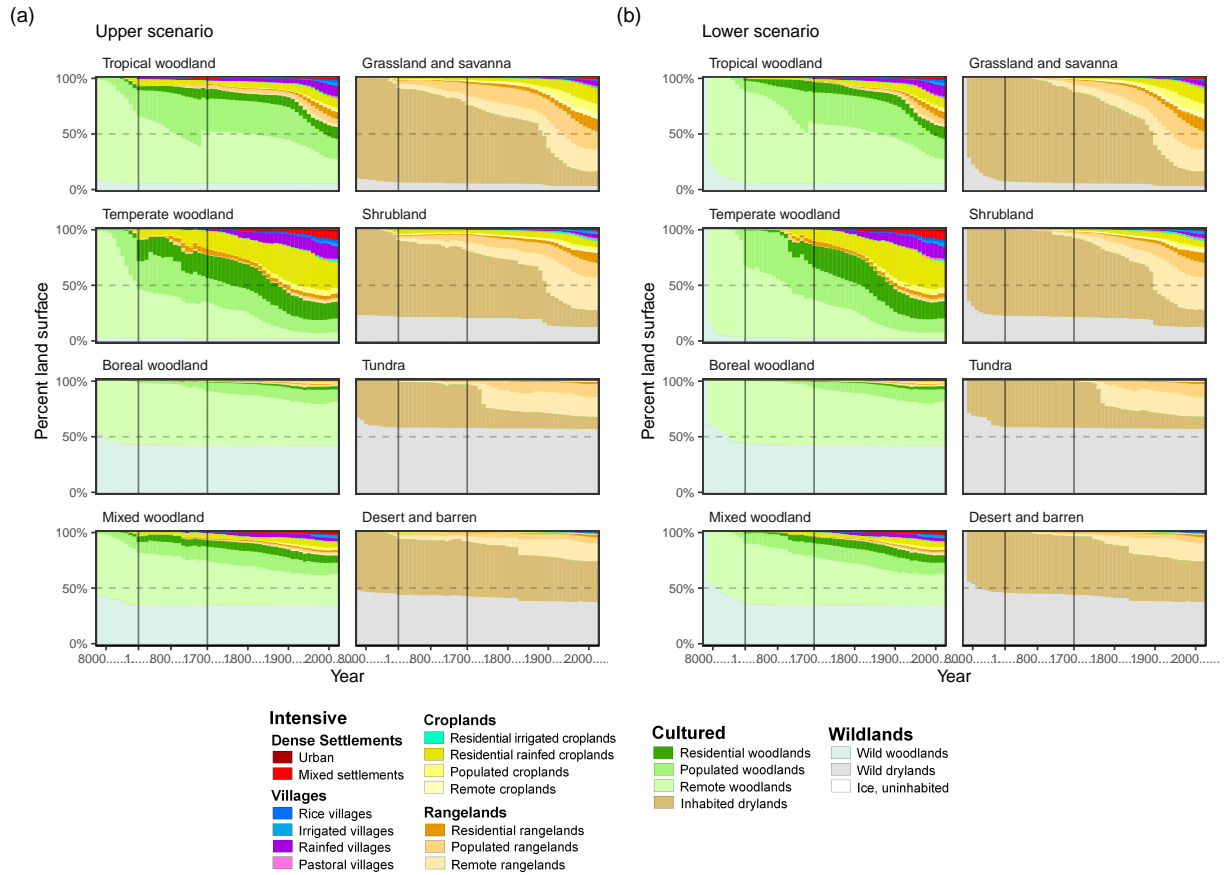
## Warning in mapply(.f, .x, .y, MoreArgs = list(...), SIMPLIFY = FALSE): longer
## argument not a multiple of length of shorter

regional_summary_upper <- an12_dgg %>%
  select(-baseline, -lower) %>%
  rename(anthrome = upper) %>%
  anthrome_trajectory(by = region_name)

regional_summary_lower <- an12_dgg %>%
  select(-baseline, -upper) %>%
  rename(anthrome = lower) %>%
  anthrome_trajectory(by = region_name)

biome_summary_upper <- an12_dgg %>%
  select(-baseline, -lower) %>%
  rename(anthrome = upper) %>%
  anthrome_trajectory(by = biome)

biome_summary_lower <- an12_dgg %>%
  select(-baseline, -upper) %>%
  rename(anthrome = lower) %>%
  anthrome_trajectory(by = biome)
```



Onsets

Calculate the onset timing of intensive anthromes.

```
# this could be a function?
intensive_onset <- an12_dgg %>%
  select(-lower, -upper) %>%
  rename(anthrome = baseline) %>%
  group_by(id) %>%
  filter(anthrome <= 43) %>%
  left_join(time_key) %>%
  summarise(intensive_onset = min(year, na.rm = TRUE))
```

```
## Joining, by = "time_step"
```

Classify the different onset timings for easier visualization.

```
change_type <- an12_dgg %>%
  select(-lower, -upper) %>%
  rename(anthrome = baseline) %>%
  group_by(id) %>%
  summarise(intensive = any(anthrome <= 43), cultured = any(anthrome <= 54)) %>%
  left_join(intensive_onset, by = 'id') %>%
```

```

mutate(class = case_when(intensive == TRUE & intensive_onset <= 1 ~ 'U0001', # fyi case when statement
                        intensive == TRUE & intensive_onset <= 1500 ~ 'U1500',
                        intensive == TRUE & intensive_onset <= 1850 ~ 'U1850',
                        intensive == TRUE & intensive_onset <= 1950 ~ 'U1950',
                        intensive == TRUE ~ 'RECNT',
                        cultured == TRUE ~ 'SEMI',
                        TRUE ~ 'NEVR')) %>%
left_join(an12_dgg_inputs, ., by = 'id') %>%
mutate(class_biome = if_else(biome %in% biome_key$biome[1:8], paste0('W_', class), paste('N_', class))
select(id, land_area, class, class_biome)

```

Print the outputs here.

```

change_type %>%
  count(class, wt = land_area, name = 'area') %>%
  mutate(percent = area / sum(area) * 100)

```

```

## # A tibble: 7 x 3
##   class      area percent
## * <chr>    <dbl> <dbl>
## 1 NEVR  24558147.  18.6
## 2 RECNT  6938042.   5.27
## 3 SEMI  37409265.  28.4
## 4 U0001  3755910.   2.85
## 5 U1500  9516554.   7.22
## 6 U1850 20209217.  15.3
## 7 U1950 29332737.  22.3

```

Same as above, but broken down by woody and non-woody biomes.

```

change_type %>%
  count(class_biome, wt = land_area, name = 'area') %>%
  mutate(percent = area / sum(area) * 100)

```

```

## # A tibble: 14 x 3
##   class_biome      area percent
## * <chr>          <dbl> <dbl>
## 1 N_ NEVR      14850942.  11.3
## 2 N_ RECNT     3361706.   2.55
## 3 N_ SEMI     12946562.   9.83
## 4 N_ U0001     2543949.   1.93
## 5 N_ U1500     6306992.   4.79
## 6 N_ U1850    14965108.  11.4
## 7 N_ U1950    21312318.  16.2
## 8 W_ NEVR      9707205.   7.37
## 9 W_ RECNT     3576335.   2.72
## 10 W_ SEMI     24462703.  18.6
## 11 W_ U0001     1211961.   0.920
## 12 W_ U1500     3209562.   2.44
## 13 W_ U1850     5244109.   3.98
## 14 W_ U1950     8020419.   6.09

```

The visualizations for this map were done separately in ArcGIS. Save out the required .csv here.

```

write_csv(change_type, 'data/derived_data/change_type.csv')

```

Olson Biomes

Rerun the biome-level analysis using the Olson Biomes.

```
olson_summary <- an12_dgg %>%
  select(-lower, -upper) %>%
  rename(anthrome = baseline) %>%
  left_join(read_csv('data/olson_biomes.csv')) %>%
  filter(!(olson_biome %in% c(0, NA))) %>% # the NAs are from the land mask, but what about the 0's
  mutate(olson_biome = as.factor(olson_biome)) %>%
  anthrome_trajectory(by = olson_biome) %>%
  mutate(olson_biome = as.numeric(olson_biome)) %>%
  left_join(olson_key)

##
## -- Column specification -----
## cols(
##   id = col_double(),
##   olson_biome = col_double()
## )

## Joining, by = "id"

## Joining, by = "olson_biome"

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on '8000 ' in 'mbsToSbcs': dot substituted for <ca>

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on '8000 ' in 'mbsToSbcs': dot substituted for <99>

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on '8000 ' in 'mbsToSbcs': dot substituted for <e1>

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on '8000 ' in 'mbsToSbcs': dot substituted for <b4>

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on '8000 ' in 'mbsToSbcs': dot substituted for <84>

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on '8000 ' in 'mbsToSbcs': dot substituted for <e1>

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on '8000 ' in 'mbsToSbcs': dot substituted for <b4>

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on '8000 ' in 'mbsToSbcs': dot substituted for <87>

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on '1 ' in 'mbsToSbcs': dot substituted for <e1>
```

```
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1 ' in 'mbcToSbc': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1 ' in 'mbcToSbc': dot substituted for <84>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1 ' in 'mbcToSbc': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1 ' in 'mbcToSbc': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1 ' in 'mbcToSbc': dot substituted for <87>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbcToSbc': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbcToSbc': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbcToSbc': dot substituted for <84>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbcToSbc': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbcToSbc': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbcToSbc': dot substituted for <87>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1700 ' in 'mbcToSbc': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1700 ' in 'mbcToSbc': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1700 ' in 'mbcToSbc': dot substituted for <84>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1700 ' in 'mbcToSbc': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1700 ' in 'mbcToSbc': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1700 ' in 'mbcToSbc': dot substituted for <87>
```



```
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2000 ' in 'mbcToSbc': dot substituted for <87>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '8000 ' in 'mbcToSbc': dot substituted for <ca>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '8000 ' in 'mbcToSbc': dot substituted for <99>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '8000 ' in 'mbcToSbc': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '8000 ' in 'mbcToSbc': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '8000 ' in 'mbcToSbc': dot substituted for <84>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '8000 ' in 'mbcToSbc': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '8000 ' in 'mbcToSbc': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '8000 ' in 'mbcToSbc': dot substituted for <87>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1 ' in 'mbcToSbc': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1 ' in 'mbcToSbc': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1 ' in 'mbcToSbc': dot substituted for <84>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1 ' in 'mbcToSbc': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1 ' in 'mbcToSbc': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1 ' in 'mbcToSbc': dot substituted for <87>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbcToSbc': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbcToSbc': dot substituted for <b4>
```

```
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbsToSbcs': dot substituted for <84>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbsToSbcs': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbsToSbcs': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbsToSbcs': dot substituted for <87>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1700 ' in 'mbsToSbcs': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1700 ' in 'mbsToSbcs': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1700 ' in 'mbsToSbcs': dot substituted for <84>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1700 ' in 'mbsToSbcs': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1700 ' in 'mbsToSbcs': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1700 ' in 'mbsToSbcs': dot substituted for <87>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1800 ' in 'mbsToSbcs': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1800 ' in 'mbsToSbcs': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1800 ' in 'mbsToSbcs': dot substituted for <84>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1800 ' in 'mbsToSbcs': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1800 ' in 'mbsToSbcs': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1800 ' in 'mbsToSbcs': dot substituted for <87>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1900 ' in 'mbsToSbcs': dot substituted for <e1>
```



```
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on '8000 ' in 'mbsToSbcs': dot substituted for <b4>

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on '8000 ' in 'mbsToSbcs': dot substituted for <87>

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on '1 ' in 'mbsToSbcs': dot substituted for <e1>

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on '1 ' in 'mbsToSbcs': dot substituted for <b4>

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on '1 ' in 'mbsToSbcs': dot substituted for <84>

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on '1 ' in 'mbsToSbcs': dot substituted for <e1>

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on '1 ' in 'mbsToSbcs': dot substituted for <b4>

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on '1 ' in 'mbsToSbcs': dot substituted for <87>

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on '800 ' in 'mbsToSbcs': dot substituted for <e1>

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on '800 ' in 'mbsToSbcs': dot substituted for <b4>

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on '800 ' in 'mbsToSbcs': dot substituted for <84>

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on '800 ' in 'mbsToSbcs': dot substituted for <e1>

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on '800 ' in 'mbsToSbcs': dot substituted for <b4>

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on '800 ' in 'mbsToSbcs': dot substituted for <87>

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on '1700 ' in 'mbsToSbcs': dot substituted for <e1>

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on '1700 ' in 'mbsToSbcs': dot substituted for <b4>

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on '1700 ' in 'mbsToSbcs': dot substituted for <84>
```



```
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1 ' in 'mbcToSbc': dot substituted for <87>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbcToSbc': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbcToSbc': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbcToSbc': dot substituted for <84>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbcToSbc': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbcToSbc': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbcToSbc': dot substituted for <87>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1700 ' in 'mbcToSbc': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1700 ' in 'mbcToSbc': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1700 ' in 'mbcToSbc': dot substituted for <84>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1700 ' in 'mbcToSbc': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1700 ' in 'mbcToSbc': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1700 ' in 'mbcToSbc': dot substituted for <87>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1800 ' in 'mbcToSbc': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1800 ' in 'mbcToSbc': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1800 ' in 'mbcToSbc': dot substituted for <84>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1800 ' in 'mbcToSbc': dot substituted for <e1>
```



```
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1 ' in 'mbcToSbc': dot substituted for <84>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1 ' in 'mbcToSbc': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1 ' in 'mbcToSbc': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1 ' in 'mbcToSbc': dot substituted for <87>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbcToSbc': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbcToSbc': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbcToSbc': dot substituted for <84>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbcToSbc': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbcToSbc': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbcToSbc': dot substituted for <87>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1700 ' in 'mbcToSbc': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1700 ' in 'mbcToSbc': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1700 ' in 'mbcToSbc': dot substituted for <84>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1700 ' in 'mbcToSbc': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1700 ' in 'mbcToSbc': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1700 ' in 'mbcToSbc': dot substituted for <87>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1800 ' in 'mbcToSbc': dot substituted for <e1>
```



```
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '8000 ' in 'mbcToSbc': dot substituted for <ca>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '8000 ' in 'mbcToSbc': dot substituted for <99>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '8000 ' in 'mbcToSbc': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '8000 ' in 'mbcToSbc': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '8000 ' in 'mbcToSbc': dot substituted for <84>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '8000 ' in 'mbcToSbc': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '8000 ' in 'mbcToSbc': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '8000 ' in 'mbcToSbc': dot substituted for <87>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1 ' in 'mbcToSbc': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1 ' in 'mbcToSbc': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1 ' in 'mbcToSbc': dot substituted for <84>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1 ' in 'mbcToSbc': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1 ' in 'mbcToSbc': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1 ' in 'mbcToSbc': dot substituted for <87>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbcToSbc': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbcToSbc': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbcToSbc': dot substituted for <84>
```



```
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '8000 ' in 'mbscsToSbcs': dot substituted for <87>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1 ' in 'mbscsToSbcs': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1 ' in 'mbscsToSbcs': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1 ' in 'mbscsToSbcs': dot substituted for <84>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1 ' in 'mbscsToSbcs': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1 ' in 'mbscsToSbcs': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1 ' in 'mbscsToSbcs': dot substituted for <87>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbscsToSbcs': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbscsToSbcs': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbscsToSbcs': dot substituted for <84>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbscsToSbcs': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbscsToSbcs': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbscsToSbcs': dot substituted for <87>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1700 ' in 'mbscsToSbcs': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1700 ' in 'mbscsToSbcs': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1700 ' in 'mbscsToSbcs': dot substituted for <84>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1700 ' in 'mbscsToSbcs': dot substituted for <e1>
```



```
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1 ' in 'mbcToSbc': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1 ' in 'mbcToSbc': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1 ' in 'mbcToSbc': dot substituted for <87>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbcToSbc': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbcToSbc': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbcToSbc': dot substituted for <84>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbcToSbc': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbcToSbc': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbcToSbc': dot substituted for <87>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1700 ' in 'mbcToSbc': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1700 ' in 'mbcToSbc': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1700 ' in 'mbcToSbc': dot substituted for <84>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1700 ' in 'mbcToSbc': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1700 ' in 'mbcToSbc': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1700 ' in 'mbcToSbc': dot substituted for <87>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1800 ' in 'mbcToSbc': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1800 ' in 'mbcToSbc': dot substituted for <b4>
```



```
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1 ' in 'mbcToSbc': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1 ' in 'mbcToSbc': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1 ' in 'mbcToSbc': dot substituted for <84>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1 ' in 'mbcToSbc': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1 ' in 'mbcToSbc': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1 ' in 'mbcToSbc': dot substituted for <87>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbcToSbc': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbcToSbc': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbcToSbc': dot substituted for <84>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbcToSbc': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbcToSbc': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbcToSbc': dot substituted for <87>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1700 ' in 'mbcToSbc': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1700 ' in 'mbcToSbc': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1700 ' in 'mbcToSbc': dot substituted for <84>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1700 ' in 'mbcToSbc': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1700 ' in 'mbcToSbc': dot substituted for <b4>
```



```
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '8000 ' in 'mbcToSbc': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '8000 ' in 'mbcToSbc': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '8000 ' in 'mbcToSbc': dot substituted for <87>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1 ' in 'mbcToSbc': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1 ' in 'mbcToSbc': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1 ' in 'mbcToSbc': dot substituted for <84>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1 ' in 'mbcToSbc': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1 ' in 'mbcToSbc': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1 ' in 'mbcToSbc': dot substituted for <87>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbcToSbc': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbcToSbc': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbcToSbc': dot substituted for <84>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbcToSbc': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbcToSbc': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbcToSbc': dot substituted for <87>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1700 ' in 'mbcToSbc': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1700 ' in 'mbcToSbc': dot substituted for <b4>
```



```
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1 ' in 'mbcToSbc': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1 ' in 'mbcToSbc': dot substituted for <87>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbcToSbc': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbcToSbc': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbcToSbc': dot substituted for <84>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbcToSbc': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbcToSbc': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbcToSbc': dot substituted for <87>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1700 ' in 'mbcToSbc': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1700 ' in 'mbcToSbc': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1700 ' in 'mbcToSbc': dot substituted for <84>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1700 ' in 'mbcToSbc': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1700 ' in 'mbcToSbc': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1700 ' in 'mbcToSbc': dot substituted for <87>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1800 ' in 'mbcToSbc': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1800 ' in 'mbcToSbc': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1800 ' in 'mbcToSbc': dot substituted for <84>
```



```
## Warning in grid.Call.graphics(C_text, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1900 ' in 'mbscsToSbcs': dot substituted for <b4>  
  
## Warning in grid.Call.graphics(C_text, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1900 ' in 'mbscsToSbcs': dot substituted for <87>  
  
## Warning in grid.Call.graphics(C_text, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2000 ' in 'mbscsToSbcs': dot substituted for <e1>  
  
## Warning in grid.Call.graphics(C_text, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2000 ' in 'mbscsToSbcs': dot substituted for <b4>  
  
## Warning in grid.Call.graphics(C_text, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2000 ' in 'mbscsToSbcs': dot substituted for <84>  
  
## Warning in grid.Call.graphics(C_text, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2000 ' in 'mbscsToSbcs': dot substituted for <e1>  
  
## Warning in grid.Call.graphics(C_text, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2000 ' in 'mbscsToSbcs': dot substituted for <b4>  
  
## Warning in grid.Call.graphics(C_text, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2000 ' in 'mbscsToSbcs': dot substituted for <87>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '8000 ' in 'mbscsToSbcs': dot substituted for <ca>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '8000 ' in 'mbscsToSbcs': dot substituted for <99>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '8000 ' in 'mbscsToSbcs': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '8000 ' in 'mbscsToSbcs': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '8000 ' in 'mbscsToSbcs': dot substituted for <84>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '8000 ' in 'mbscsToSbcs': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '8000 ' in 'mbscsToSbcs': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '8000 ' in 'mbscsToSbcs': dot substituted for <87>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1 ' in 'mbscsToSbcs': dot substituted for <e1>
```

```
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1 ' in 'mbcToSbc': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1 ' in 'mbcToSbc': dot substituted for <84>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1 ' in 'mbcToSbc': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1 ' in 'mbcToSbc': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1 ' in 'mbcToSbc': dot substituted for <87>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbcToSbc': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbcToSbc': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbcToSbc': dot substituted for <84>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbcToSbc': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbcToSbc': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbcToSbc': dot substituted for <87>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1700 ' in 'mbcToSbc': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1700 ' in 'mbcToSbc': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1700 ' in 'mbcToSbc': dot substituted for <84>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1700 ' in 'mbcToSbc': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1700 ' in 'mbcToSbc': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1700 ' in 'mbcToSbc': dot substituted for <87>
```



```
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2000 ' in 'mbcToSbc': dot substituted for <87>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '8000 ' in 'mbcToSbc': dot substituted for <ca>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '8000 ' in 'mbcToSbc': dot substituted for <99>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '8000 ' in 'mbcToSbc': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '8000 ' in 'mbcToSbc': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '8000 ' in 'mbcToSbc': dot substituted for <84>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '8000 ' in 'mbcToSbc': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '8000 ' in 'mbcToSbc': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '8000 ' in 'mbcToSbc': dot substituted for <87>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1 ' in 'mbcToSbc': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1 ' in 'mbcToSbc': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1 ' in 'mbcToSbc': dot substituted for <84>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1 ' in 'mbcToSbc': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1 ' in 'mbcToSbc': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1 ' in 'mbcToSbc': dot substituted for <87>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbcToSbc': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbcToSbc': dot substituted for <b4>
```

```
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbsToSbcs': dot substituted for <84>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbsToSbcs': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbsToSbcs': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbsToSbcs': dot substituted for <87>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1700 ' in 'mbsToSbcs': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1700 ' in 'mbsToSbcs': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1700 ' in 'mbsToSbcs': dot substituted for <84>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1700 ' in 'mbsToSbcs': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1700 ' in 'mbsToSbcs': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1700 ' in 'mbsToSbcs': dot substituted for <87>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1800 ' in 'mbsToSbcs': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1800 ' in 'mbsToSbcs': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1800 ' in 'mbsToSbcs': dot substituted for <84>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1800 ' in 'mbsToSbcs': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1800 ' in 'mbsToSbcs': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1800 ' in 'mbsToSbcs': dot substituted for <87>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1900 ' in 'mbsToSbcs': dot substituted for <e1>
```



```
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '8000 ' in 'mbsToSbcs': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '8000 ' in 'mbsToSbcs': dot substituted for <87>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1 ' in 'mbsToSbcs': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1 ' in 'mbsToSbcs': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1 ' in 'mbsToSbcs': dot substituted for <84>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1 ' in 'mbsToSbcs': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1 ' in 'mbsToSbcs': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1 ' in 'mbsToSbcs': dot substituted for <87>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbsToSbcs': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbsToSbcs': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbsToSbcs': dot substituted for <84>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbsToSbcs': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbsToSbcs': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbsToSbcs': dot substituted for <87>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbsToSbcs': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1700 ' in 'mbsToSbcs': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1700 ' in 'mbsToSbcs': dot substituted for <84>
```



```
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1 ' in 'mbscToSbcs': dot substituted for <87>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbscToSbcs': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbscToSbcs': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbscToSbcs': dot substituted for <84>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbscToSbcs': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbscToSbcs': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbscToSbcs': dot substituted for <87>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1700 ' in 'mbscToSbcs': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1700 ' in 'mbscToSbcs': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1700 ' in 'mbscToSbcs': dot substituted for <84>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1700 ' in 'mbscToSbcs': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1700 ' in 'mbscToSbcs': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1700 ' in 'mbscToSbcs': dot substituted for <87>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1800 ' in 'mbscToSbcs': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1800 ' in 'mbscToSbcs': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1800 ' in 'mbscToSbcs': dot substituted for <84>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1800 ' in 'mbscToSbcs': dot substituted for <e1>
```



```
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on '1 ' in 'mbcToSbc': dot substituted for <84>

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on '1 ' in 'mbcToSbc': dot substituted for <e1>

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on '1 ' in 'mbcToSbc': dot substituted for <b4>

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on '1 ' in 'mbcToSbc': dot substituted for <87>

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on '800 ' in 'mbcToSbc': dot substituted for <e1>

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on '800 ' in 'mbcToSbc': dot substituted for <b4>

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on '800 ' in 'mbcToSbc': dot substituted for <84>

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on '800 ' in 'mbcToSbc': dot substituted for <e1>

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on '800 ' in 'mbcToSbc': dot substituted for <b4>

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on '800 ' in 'mbcToSbc': dot substituted for <87>

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on '1700 ' in 'mbcToSbc': dot substituted for <e1>

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on '1700 ' in 'mbcToSbc': dot substituted for <b4>

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on '1700 ' in 'mbcToSbc': dot substituted for <84>

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on '1700 ' in 'mbcToSbc': dot substituted for <e1>

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on '1700 ' in 'mbcToSbc': dot substituted for <b4>

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on '1700 ' in 'mbcToSbc': dot substituted for <87>

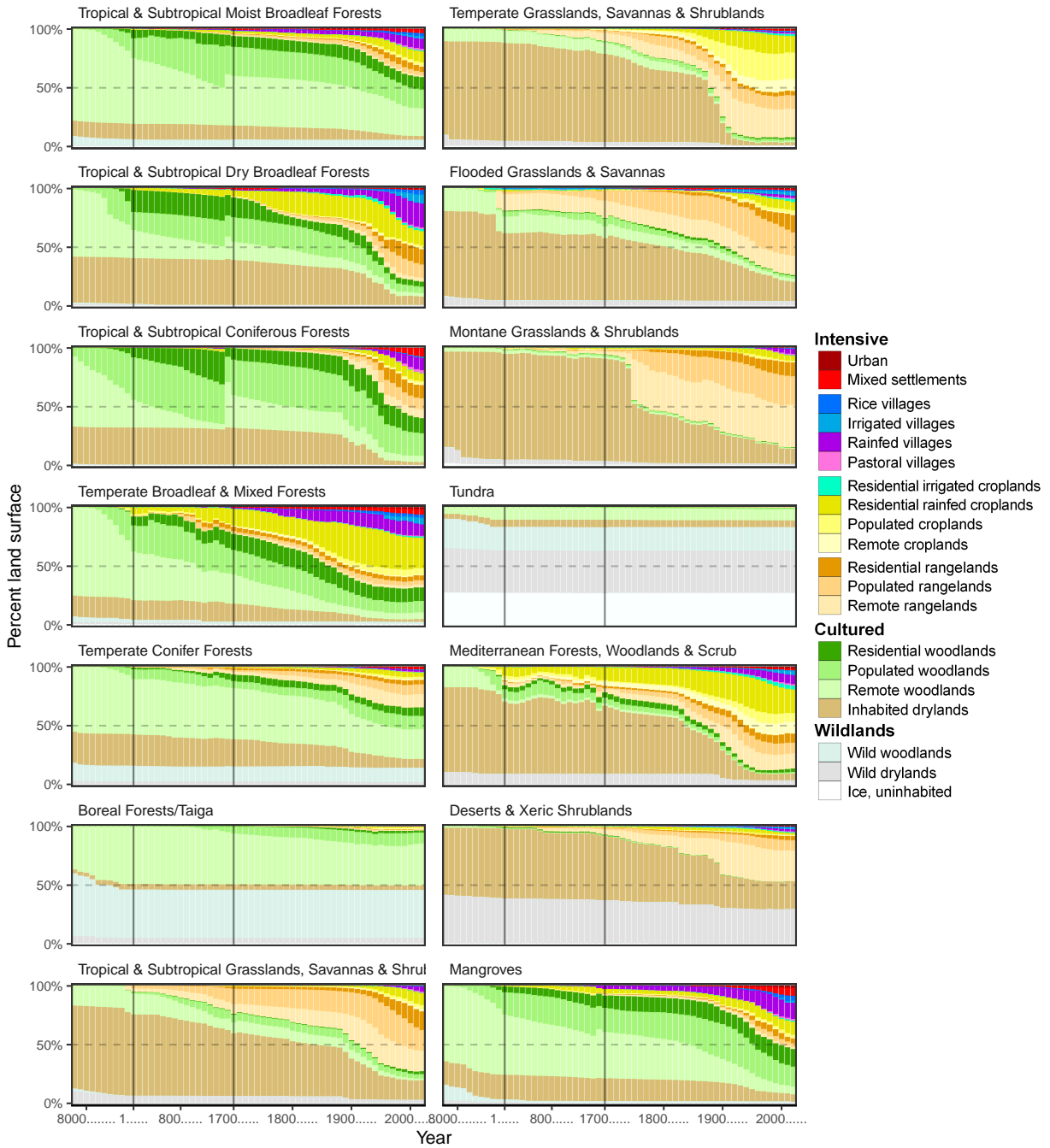
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on '1800 ' in 'mbcToSbc': dot substituted for <e1>
```



```
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '8000 ' in 'mbsToSbcs': dot substituted for <87>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1 ' in 'mbsToSbcs': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1 ' in 'mbsToSbcs': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1 ' in 'mbsToSbcs': dot substituted for <84>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1 ' in 'mbsToSbcs': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1 ' in 'mbsToSbcs': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1 ' in 'mbsToSbcs': dot substituted for <87>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbsToSbcs': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbsToSbcs': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbsToSbcs': dot substituted for <84>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbsToSbcs': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbsToSbcs': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '800 ' in 'mbsToSbcs': dot substituted for <87>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1700 ' in 'mbsToSbcs': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1700 ' in 'mbsToSbcs': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1700 ' in 'mbsToSbcs': dot substituted for <84>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1700 ' in 'mbsToSbcs': dot substituted for <e1>
```



```
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2000 ' in 'mbcToSbc': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2000 ' in 'mbcToSbc': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2000 ' in 'mbcToSbc': dot substituted for <84>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2000 ' in 'mbcToSbc': dot substituted for <e1>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2000 ' in 'mbcToSbc': dot substituted for <b4>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2000 ' in 'mbcToSbc': dot substituted for <87>  
  
## Warning in grid.Call.graphics(C_text, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '8000 ' in 'mbcToSbc': dot substituted for <ca>  
  
## Warning in grid.Call.graphics(C_text, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '8000 ' in 'mbcToSbc': dot substituted for <99>  
  
## Warning in grid.Call.graphics(C_text, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '8000 ' in 'mbcToSbc': dot substituted for <e1>  
  
## Warning in grid.Call.graphics(C_text, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '8000 ' in 'mbcToSbc': dot substituted for <b4>  
  
## Warning in grid.Call.graphics(C_text, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '8000 ' in 'mbcToSbc': dot substituted for <84>  
  
## Warning in grid.Call.graphics(C_text, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '8000 ' in 'mbcToSbc': dot substituted for <e1>  
  
## Warning in grid.Call.graphics(C_text, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '8000 ' in 'mbcToSbc': dot substituted for <b4>  
  
## Warning in grid.Call.graphics(C_text, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '8000 ' in 'mbcToSbc': dot substituted for <87>  
  
## Warning in grid.Call.graphics(C_text, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1 ' in 'mbcToSbc': dot substituted for <e1>  
  
## Warning in grid.Call.graphics(C_text, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1 ' in 'mbcToSbc': dot substituted for <b4>  
  
## Warning in grid.Call.graphics(C_text, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1 ' in 'mbcToSbc': dot substituted for <84>
```

knitr::knit_exit()